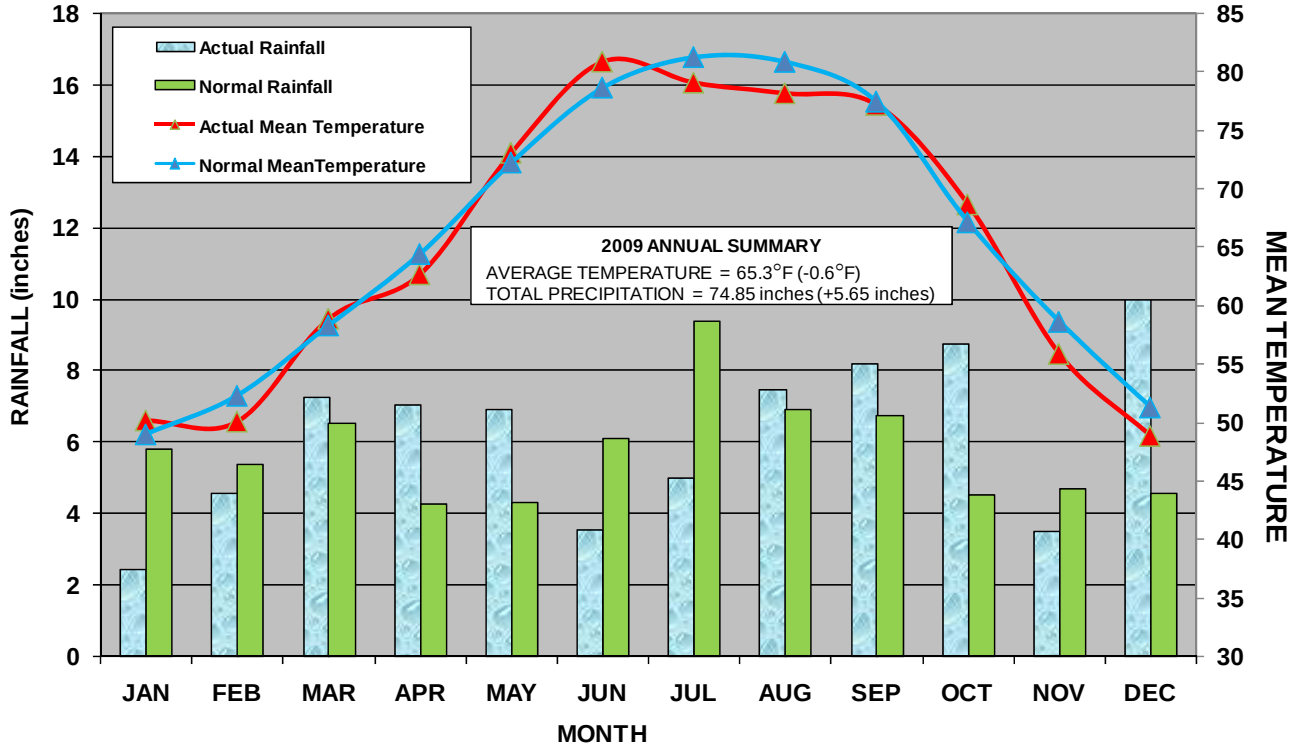
Introduction

December 2009 produced below normal temperatures and much above normal precipitation for Niceville, FL. The noteworthy phenomenon of the month was the presence of strong Gulf lows and active frontal boundaries across the central Gulf Coast. The combination of a persistently strong upper-level jet stream deflected south across northern Mexico and low-level moisture convergence from the Gulf of Mexico resulted in extreme rainfall amounts over southeast U.S. The moderate strength El Niño was a contributing climatic influence. Five cold fronts cleared the area on the 2nd, 9th, 15th, 25th, and 31st and four warm fronts advanced northward across the FL panhandle coast on 2nd, 13th, 18th, and 24th December. Four gulf lows tracked across the coast on 2nd, 13th, 18th, and 31st December. Strong thunderstorms produced 40+ mph wind gusts at Mary Ester, Eglin AFB, and Panama City accompanied by locally heavy rainfall of 2 to 3 inches on 2nd December. The Duke Field Fire Department reported a tornado, but no damage was reported; however, straight-line winds in Crestview, FL knocked down a large tree on the 2nd December. Light snow flurries were reported across northern Escambia County, FL on the early hours of 5th December. A severe thunderstorm caused isolated damage to outbuildings near Jay and down trees near Munson (Santa Rosa County), FL on 14th December. A strong squall-line produced severe thunderstorms on Christmas Eve night which downed a large tree in Fort Walton Beach, FL and caused power line and isolated home damage near Beulah (Escambia County), FL. Estimated rainfall totals range from 10 to 15 inches with some isolated areas near 20 inches fell in southwestern Alabama, where extreme flooding occurred during the nighttime hours of 14-15th December (Figure 1). Brewton (Escambia County), AL was flooded. Flooding caused roads and schools to be closed in Louisiana, Alabama, and Georgia. Significant regional flooding on major streams resulted, but has since receded to normal levels (Figure 2). New Orleans, LA observed more than 7 inches of rain in a 24-hour period. This storm, as well as previous rain events for the month, led the New Orleans's Louis Armstrong International Airport to have its wettest month on record, beating the old record of 21.18 inches set in May 1995. Observations in the New Orleans area go back to 1871, and the all-time record for the city of 25.11 inches set in 1937 which was broken with **25.92** inches of rainfall during December 2009.

2009 Jackson Guard Rainfall/NVOC Temperature
1971-2000 Climatic Normal (Niceville, FL)



December 2009 Climate Summary

Jackson Guard rainfall for December totaled **10.01** inches and the Niceville (NVOC) Regional Sewer Board°F, Inc. recorded **10.32** inches. This was the *fifth wettest December* since record keeping began in 1927. There were 18 days with measurable precipitation in Niceville, which is 12 days above the December average. There was 4 thunderstorm days during the month, which is 3 days above normal. A record 24 hour rainfall of 1.80 inches on 2nd December broke the previous record for this date 1.37 inches (1927) for Niceville. **Annual Niceville 2009 rainfall of 77.16 inches was the *12th wettest year* on record.**

Eglin AFB recorded **8.45** inches for the month, *3.80* inches above the normal of 4.65 inches. Pensacola, FL recorded **13.75** inches, which is *9.78* inches above the normal of 3.97 inches.

The Keetch-Byram Drought Index (KBDI) at the beginning of January 2009 was ***very low.*** The values below are an indicator of soil moisture conditions in the counties containing Eglin AFB natural resources.

Florida County	**Average KBDI** (1 January 2010)	**Florida County**	**Average December 2009 Rainfall (inches)**
Santa Rosa	9	Santa Rosa	11.40
Okaloosa	13	Okaloosa	9.05
Walton	12	Walton	8.54
Gulf	37	Gulf	12.29

For more information on daily KBDI values, visit the Florida Division of Forestry: KBDI index.

The summary below is the annual precipitation that occurred across the central Gulf coast:

Station	2009 Rainfall (inches)	Normal Rainfall (inches)	Departure (inches) from Normal	(years)
Tallahassee	58.11	63.21	- 5.10	1971-2000
Eglin AFB	65.62	62.49	+ 3.13	1940-2008
Jackson Guard	74.85	69.20	+ 5.59	1971-2000
NVOC-Niceville	77.16	69.20	+ 7.96	1971-2000
Pensacola	88.30	64.28	+24.02	1971-2000
Mobile	76.47	66.29	+10.18	1871-2000

The monthly mean temperature was **48.9**°F, which was 2.4°F *below* normal. The average high temperature at Niceville NVOC was **58.1**°F (5.7°F *below* normal). The highest temperature of the month was **76**°F observed on the 10th December. Two record low maximum temperatures of 45°F were established on 5th & 6th December breaking the previous records of 49°F (12/5/1971) and 55°F (12/6/1940). The average low temperature was **39.7**°F (0.9°F *above* normal). The lowest temperature of the month was **27**°F observed on the 29th December. There were 9 mornings when the minimum temperature was <=32°F which was normal. **Annual Niceville 2009 mean temperature of 65.3°F was the *15th coolest year* on record.**

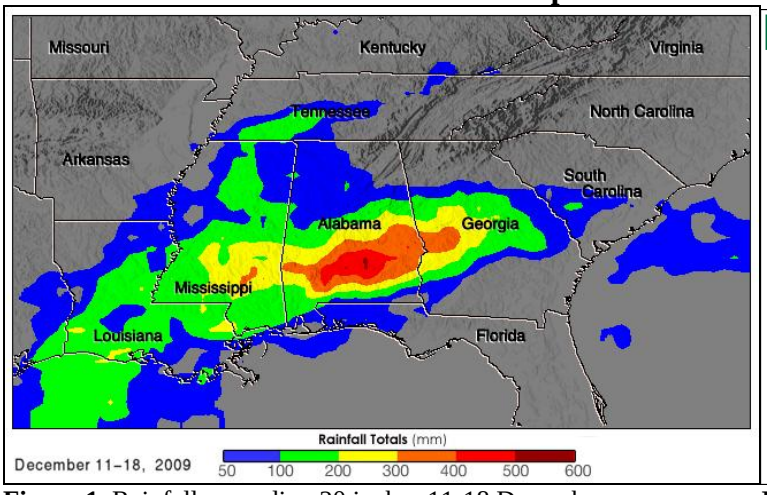


Figure 1. Rainfall exceeding 20 inches 11-18 December.

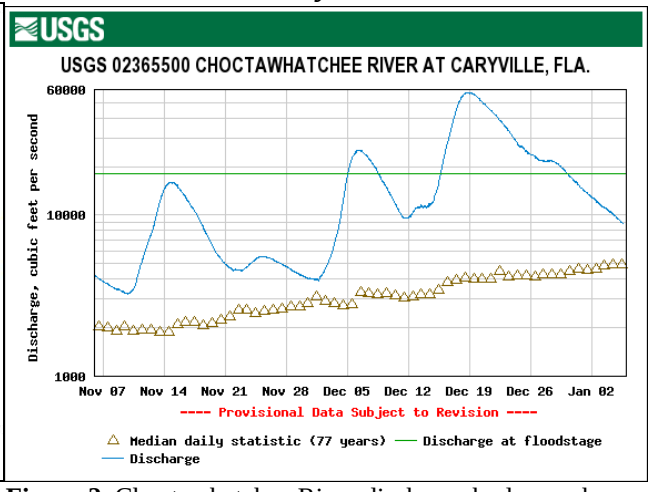


Figure 2. Choctawhatchee River discharge hydrograph.

El Niño Update

Current conditions and statistical forecasts indicate that a moderate strength El Niño episode will continue through March 2010. Current sea surface temperature (SST) departures of 1.0°C to 3.0°C occur across much of the central and east-central equatorial Pacific Ocean. The latest weekly departure was **1.8°C** above normal in the Nino 3.4 region. The Oceanic Niño Index (ONI) is based on SST departures from an average in the Niño 3.4 region, and is a principal measure for assessment of an El Niño episode. The most recent ONI value for the period October-December 2010 is **1.5°C**. This value places the current El Niño as the *tenth* strongest event of out the 17 strongest El Niño events on record. The majority of models indicate Niño-3.4 temperature departures will gradually weaken, but that El Niño will continue into April-May-June 2010.

January Outlook

The Climate Prediction Center http://www.cpc.ncep.noaa.gov/products/predictions/30day/ outlook for January 2010 predicts below normal temperatures and above normal rainfall for the northwest FL.

January Climatology

January is the coldest winter month with polar fronts arriving every four to five days. Gulf lows form when the orientation of the jet stream traverses the Gulf of Mexico or induces a wave along a stationary front. These weather systems result in steady and showery weather producing moderate to heavy precipitation. No measurable snowfall or frozen precipitation has ever been recorded at Eglin AFB during January since records began in 1940. Visibility becomes obstructed due to fog an average of 18 days. Advection or sea fog (warm air moving over colder Gulf water and inland waterways) can occur anytime during the day, but most often forms during the late afternoon and can persist for several days.

Thunderstorm frequency averages 2 days during January and 9 days have measurable rainfall. Normal rainfall is **4.45** inches at Eglin AFB and **5.80** inches at Niceville recording stations. The maximum Eglin AFB 24-hour rainfall is 5.46 inches recorded on January 26, 1976 and Niceville 24-hour rainfall is 4.40 inches recorded on January 27, 1974. Record Eglin January rainfall is 19.97 inches (1991). The driest Eglin January produced only 0.18 inch in 2003.

Average monthly temperatures range from **60ºF to 42ºF** at Eglin AFB and **61ºF to 38ºF** in Niceville. The record high for Eglin AFB is **78ºF** (six dates) and the record low is **6ºF** (January 21, 1985). The January extreme temperature for Niceville is 80ºF (January 20, 1950) and 4ºF (January 21, 1985). Minimum temperatures below 32ºF average seven days during January (Eglin AFB) and twelve days for Niceville.

Relative humidity (RH) averages 70%. RH > 70% occurs 53 percent of the time. The highest hourly humidity (average RH = 77%) occurs between the hours of midnight and 8 a.m.

Surface winds are primarily northerly during the day occur with speeds averaging up to 9 mph. Frontal waves and gulf lows alter winds to a northeast to southerly component. Highest January wind gust was 56 m.p.h. in 1983 from the west.

This information was compiled from Jackson Guard rainfall observations. NVOC Regional Water Sewer Board, Inc. in Niceville, FL provided the temperature and additional rainfall data. Other reports were obtained from Eglin AFB 46th Weather Squadron, 10th Combat Weather Squadron-Hurlburt Field, Mobile National Weather Service, NOAA Climate Prediction Center, Southeast Regional Climate Center, Florida Division of Forestry, and the National Hurricane Center websites. Atlantic Hurricane 2009 track map was provided by the Weather Underground and the hurricane summary from Colorado State University Tropical Meteorology Project.